

<p>Technique</p>	<p>Use junction boxes and hardlines to provide common charge points for grease lubrication of mechanical systems.</p>
 <p>Common Charge Points for Lubrication Systems for Mechanical Ground Support Equipment</p> <p><i>The use of a single charge point for simultaneous multiple lubrication saves time, money and manpower during maintenance</i></p>	
<p>Benefits</p>	<p>This practice reduces the amount of time spent during maintenance by reducing the number of locations to access for grease lubrication. This practice will also eliminate the need to access difficult to reach locations and make maintenance safer by eliminating the need to access hazardous locations.</p>
<p>Key Words</p>	<p>Lubrication, Mechanical, Safety, GSE</p>
<p>Application Experience</p>	<p>Space Transportation System (STS), Facilities and Ground Support Equipment. Example: Vehicle Assembly Building (VAB) 325 Ton Bridge Cranes.</p>
<p>Technical Rationale</p>	<p>Maintenance effort and system downtime will be reduced by the implementation of this practice.</p>
<p>Contact Center</p>	<p>Kennedy Space Center (KSC)</p>

Common Charge Points for Lubrication Systems Technique DFE-3

Required maintenance time is reduced by use of junction boxes and hardlines to lubricate bearing surfaces on mechanical equipment. This practice is most beneficial on large mechanical systems such as bridge cranes. Overhead bridge cranes require periodic lubrication of pivot bearings, wheel bearings, shafts, and other bearing surfaces. This servicing requires the maintenance technician to access a large number of locations on the equipment. The junction boxes are used to create locations from which many bearing surfaces can be lubricated at the same time. This reduces the number of locations that maintenance personnel must access.

The junction boxes are machined metal blocks with internal passageways for the grease or oil. There are two banks of hardline connection points along the bottom of the block. The blocks are available in various sizes allowing 2-12 hardlines to be connected. Each hardline that connects to the junction box is coupled to an internal chamber with a double acting piston. A pin indicator on top of each piston controls the volume (.012 - .072 cu. in.) of lubricant delivered and provides positive indication of discharge to each bank.

There is a lever at one end of the block which directs the flow of grease from the grease fitting to one of the two banks of hardlines. With the lever in the vertical position, the maintenance technician applies grease through a grease fitting (Figure A). This directs lubricant to the top of the double acting piston in each chamber driving them downward thereby forcing lubricant under each piston to be discharged into the bank

one hardlines. This continues until all of the pin indicators are fully retracted. This indicates that the proper volume of lubricant has been applied to each hardline in bank one and bank two and is ready for discharge.

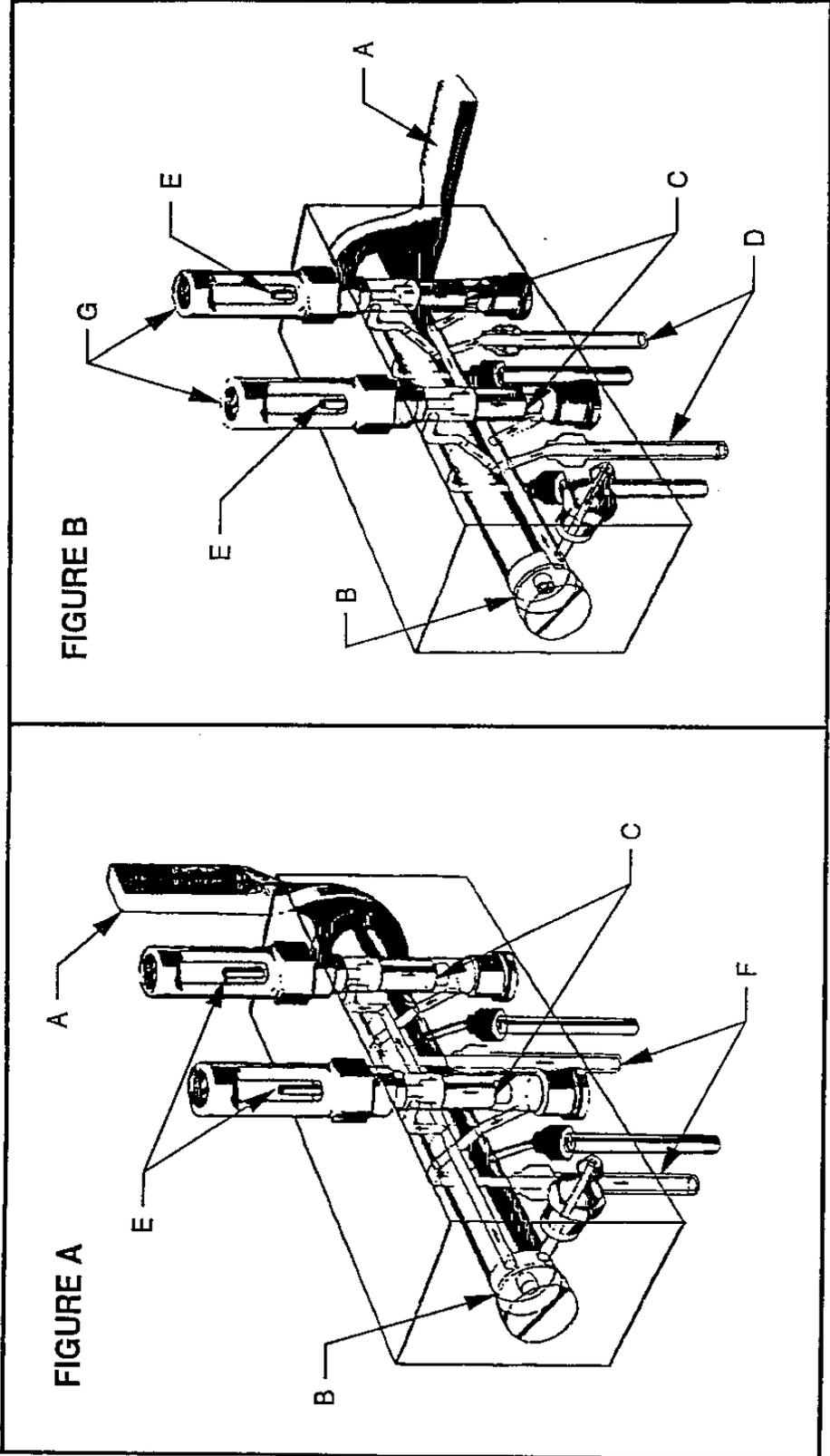
The technician then rotates the lever and again applies grease through the grease fitting (Figure B). This applies lubricant under the piston in each chamber driving them upward. Lubricant is forced into each bank two hardline and the chamber is replenished to service bank one. When all the pin indicators are fully extended, the proper volume of grease has been applied to each hardline in bank two. The lever is then returned to the original position, ready for the next lubrication cycle.

The primary benefit of this practice is minimizing maintenance time (20 - 40%) by consolidating a large number of locations requiring maintenance action into only a few. This practice further reduces maintenance time by placing the lubrication junction boxes on easy to access locations such as personnel walkways.

Placing the lubrication junction boxes on personnel walkways will also reduce safety hazards during maintenance. Some locations requiring lubrication may not only be difficult to access but may be hazardous, requiring special safety equipment such as safety harnesses and temporary work platforms. Special access requirements can be reduced or eliminated by the implementation of the practice.

References

None.



- E - INDICATOR STEMS
- F - BANK 1 DISCHARGE LINES
- G - VOLUME DISCHARGE ADJUSTMENT SCREWS

- A - ROTARY VALVE HANDLE
- B - ROTARY VALVE
- C - MEASURING PISTONS
- D - BANK 2 DISCHARGE LINES

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